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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,145

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Mitsunori Nakatani

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EXAMINER

MERSHON, JAYNE L

ART UNIT

PAPER NUMBER

1795

NOTIFICATION DATE

DELIVERY MODE

05/18/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No. 10/591,145	Applicant(s) NAKATANI ET AL.	
	Examiner Jayne Mershon	Art Unit 4111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/30/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

Claims 1-15 are pending. Claims 1-11 have been withdrawn by amendment. Claims 12-15 have been examined below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

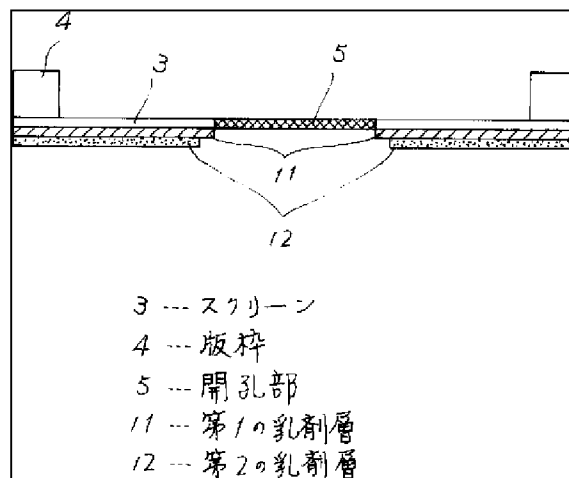
1. Claims 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hikoharu (JP 6-143855 A).

Regarding claim 12, Hikoharu teaches a printing mask (see below figure) comprising:
a mask frame (4) and a mesh (3) extended on the mask frame (see paragraph [0010], wherein the mesh includes a pattern forming portion, i.e. opening portion (5) that is not filled with resin (see paragraph [0010]), wherein the pattern forming portion is located in a region corresponding to an electrode pattern to be formed on a printing object (see paragraph [0001], i.e. circuit pattern);

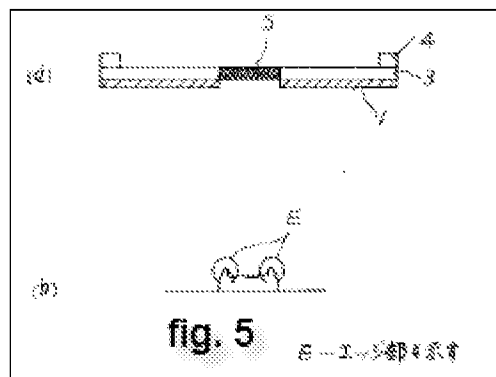
a mask portion that is filled with resin (3), wherein the mask portion is located in a region other than the region of the pattern forming portion; and

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a peripheral portion (11) that is filled by resin, wherein the peripheral portion is located within the pattern forming portion and along a periphery of the pattern forming portion (see paragraphs [0010]-[0011])). Specifically stated, the first emulsion (11) is smaller, for an example cited the first emulsion opening is 4.8 mm by 1.8 mm and the second emulsion (12) forms an opening 5.0 mm by 2.0 mm.



Regarding claim 13, Hikoharu teaches a printing mask wherein the peripheral portion (11) is located within a range corresponding to a width of a bulge from an end of the electrode pattern, which is formed at the end of the electrode pattern on forming the electrode pattern (see paragraphs [0006] and [0008])). Specifically, the edge portion is thicker as described (see fig. 5 below) and the problem is solved by the two layer emulsion.



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Regarding claim 14, Hikoharu teaches a printing mask wherein the peripheral portion has a width of equal to or smaller than 0.2 millimeter, and is located within a range not less than 0.1 millimeter and not more than 0.5 millimeter from the periphery of the pattern forming portion (see paragraph [0010]). Specifically, in the example given, the peripheral portion (11) is 0.2 mm smaller, resulting in a 0.1 mm range on each side. A specific example in the prior art which is within a claimed range anticipates the range (see MPEP § 2131.03 I).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Hikoharu (JP 6-143855 A).

The instant application teaches as a general solar cell comprising:

a semiconductor layer formed on a semiconductor substrate having a p-n junction in parallel with a substrate surface;

a front silver electrode formed in a predetermined shape on a surface of the semiconductor layer;

a back aluminum electrode formed on a back surface of the semiconductor layer so that a part of the semiconductor layer is exposed; and

a back silver electrode formed to cover an exposed part that is not covered by the back aluminum electrode on the semiconductor layer and a part of the back aluminum electrode arranged adjacent to the exposed part (see paragraph [0007] of the instant application).

The instant application does not teach as prior art a solar cell wherein a difference in average film thickness between a bulge at an edge part and other parts of the back aluminum electrode is equal to or less than 5 micrometers.

Hikoharu teaches a method of reducing the difference in average film thickness between a bulge at an edge part and other parts of the part is 5 mm or less (see paragraph [0024] and Table 1), i.e. 0.4% of emulsion thickness 20 mm is less than 1 mm.

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Although, Hikoharu does teach the reduction specified the actual reduction in the edge bulge is dependent on the thickness of the screen material and the thickness of the peripheral portion (11). Optimizing the peripheral portion to achieve a difference between the edge bulge and the center of the printed part is considered non-obvious (see MPEP § 2144.05 II).

Hikoharu teaches the two layer emulsion screen can improve the homogeneity of the printed film between the edge and center of the part being printed (see paragraph [0028]).

Therefore, it would be obvious to a person having ordinary skill in the art to modify the aluminum back electrode as taught in the instant application by printing with the screen taught by Hikoharu because the printed part would be more uniform and flat.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jayne Mershon whose telephone number is (571) 270-7869. The examiner can normally be reached on 9:00 AM to 5:00 PM; alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLM

5/7/2009

/Brian J. Sines/

Supervisory Patent Examiner, Art Unit 1795